

## Comparative analysis of the effect of pretreating aspen wood with aqueous and aqueous-organic solutions of sulfuric and nitric acid on its reactivity during enzymatic hydrolysis - DTU Orbit (09/11/2017)

### Comparative analysis of the effect of pretreating aspen wood with aqueous and aqueous-organic solutions of sulfuric and nitric acid on its reactivity during enzymatic hydrolysis

The effect of aspen wood pretreatment methods with the use of both aqueous solutions of sulfuric and nitric acids and aqueous-organic solutions (ethanol, butanol) of sulfuric acid (organosolv) on the limiting degree of conversion of this type of raw material into simple sugars during enzymatic hydrolysis are compared. The effects of temperature, acid concentration, composition of organic phase (for sulfuric acid), and pressure (for nitric acid) on the effectiveness of pretreatment were analyzed. It is shown that the use of organosolv with 0.5% sulfuric acid allows us to increase the reactivity of ground wood by 300–400%, compared to the initial raw material. Pretreatment with a 4.8% aqueous solution of nitric acid (125°C, 1.8 MPa, 10 min) is shown to be most effective, as it increases the reactivity of the ground aspen wood by more than 500%.

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